

## RESEARCH ARTICLE



# The Impact of Green Legacy on Climate Change in Ethiopia

Edward Lambert<sup>1</sup> and Kanbiro Orkaido Deyganto<sup>1,\*</sup> 

<sup>1</sup>*School of Business and Economics, Atlantic International University, USA*

**Abstract:** A green legacy initiative plays a crucial role in promoting a healthy environment in Ethiopia by restoring ecosystems, mitigating climate change, and fostering environmental awareness and stewardship. Through its tree planting efforts, the initiative aims to create a sustainable and resilient environment that benefits both nature and the people of Ethiopia. The research gap lies in the need for comprehensive studies that assess the impact of the green legacy initiative on promoting a healthy environment in Ethiopia. This includes evaluating its impact on biodiversity conservation, soil conservation, and the social and health outcomes of local communities. The mixed-method research was employed by researchers. The regression result was evidenced that tree planting, growing trees for carbon sequestration, biodiversity conservation, soil conservation, community engagement, and climate education have positive statistically significant effect on healthy environment in Ethiopia. Based on the research findings, the researchers were forwarded the recommendations for policymakers and government of Ethiopia to take into consideration the six parameters of green legacy in implementing green legacy incentives in Ethiopia. Addressing these parameters of green legacy will provide a more holistic understanding of the initiative's effectiveness and contribute to evidence-based decision-making for sustainable environmental management in Ethiopia.

**Keywords:** green legacy, healthy environment, biodiversity conservation, soil conservation, community engagement, climate education

A green legacy is essential for the world to ensure a healthier and safer future. It allows us to leave behind a sustainable world for future generations to enjoy and appreciate. By reducing our environmental footprint, we can help to preserve natural resources, reduce air and water pollution, and combat climate change. Through green practices, such as energy efficiency, waste reduction, and renewable energy, we can help to ensure that the planet is still here for our children and grandchildren to enjoy. We owe it to them to do our part to create a green legacy.

## 1. Introduction

Climate change has become a major global concern in recent decades and is now widely considered one of the most pressing environmental issues facing humanity. In response, the Paris Agreement was established in 2015, a global agreement among nearly 200 countries to reduce greenhouse gas emissions and limit global temperature rise to well below 2°C and provide climate finances for developing countries (United Nations, 2015). This agreement has been widely seen as a major step forward in tackling the challenge of climate change and is a strong reminder of the importance of taking action to ensure a sustainable future for all (Ethiopian Economics Association, 2023; Pritchard, 2021; United Nations Framework Convention on Climate Change, 2020).

Different researchers addressed the issue of green legacy across the world and reached on different conclusion. For example, Razzaq et al. (2023) evidenced that green legacy policy has positive impact on climate change in Asia. On the same way, empirical evidence of Ali et al. (2021), Trees for All (2023), Hamad (2022), and Phiri et al. (2022) suggested that green legacy has positive impact on promoting healthy environment in Africa. Study of Da Graça Carvalho (2012) suggested energy and climate change strategy in Europe has positive impact in fostering green environment.

With regard to Ethiopia, few researchers addressed the issue. For instance, Fekadu Hailu et al. (2021) evidenced that green legacy has high contribution to mitigating climate change and improving air quality. Also, the research by Fentaw et al. (2022) suggested that planting trees and monitoring planted trees enable the improved animal species diversity, abundance, and fresh air. So, green legacy has positive contribution to healthy environment in Ethiopia. Particularly past studies reviewed were above ignored but the current study was addressed the six parameters of green legacy such as tree planting, growing trees for carbon sequestration, biodiversity conservation, soil conservation, community engagement, and climate education on healthy environment in Ethiopia. These parameters collectively provide an important stimulation for combating the climate changes. Monitoring these parameters over time can help track progress, identify areas for improvement, and inform future strategies for climate change mitigation in Ethiopia. Therefore, this research paper was set out examine the impact of six green legacy parameter such as tree planting, growing trees for carbon sequestration, biodiversity conservation, soil conservation, community engagement, climate education on healthy environment

\*Corresponding author: Kanbiro Orkaido Deyganto, School of Business and Economics, Atlantic International University, USA. Email: [kanbiro.orkaido@gmail.com](mailto:kanbiro.orkaido@gmail.com).

in Ethiopia. At the same time, this paper also assessed the challenges contradicting the green legacy incentive program in Ethiopia.

## 2. Review of Related Literature

### 2.1. Concept of green legacy and healthy environment

The green legacy initiative in Ethiopia plays a crucial role in promoting a healthy environment through its ambitious tree planting efforts. By focusing on large-scale reforestation, the initiative aims to address environmental degradation, combat climate change, and restore the health of ecosystems (Ethiopian Monitor, 2023). Trees are known for their numerous benefits to the environment, and the green legacy initiative utilizes this knowledge to create a sustainable and resilient ecosystem in Ethiopia. The initiative's role in promoting a healthy environment is multifaceted (Kandasamy et al., 2022). Moreover, trees contribute to the goal of preserving life below water by protecting watersheds, reducing soil erosion, and providing habitats for diverse aquatic species. Additionally, their importance in the goal of eradicating poverty and promoting sustainable economic growth cannot be undermined, as they provide a renewable source of timber, fuel wood, and non-timber forest products for local communities. Overall, trees make significant contributions toward various Sustainable Development Goals (SDGs), emphasizing the need to protect and increase their numbers for a sustainable future (Corbett & Mellouli, 2017). This increased environmental consciousness can have long-term benefits for the health and well-being of the population. A cleaner and healthier environment directly impacts human health, as it reduces air pollution, provides access to clean water, and creates a more favorable climate. By promoting a healthy environment, the green legacy initiative contributes sustainable and prosperous future for generations to come.

#### 2.1.1. Climate change in Ethiopia

Climate change is an issue of increasing concern in Ethiopia, as it is a particularly vulnerable country to the effects of climate change. It is estimated that Ethiopia has already experienced a temperature increase of 1.3°C since 1960. This warming trend is likely to continue and is projected to increase by an additional 1.5°C by 2050 (United Nations Development Programme, 2019). Climate change is expected to have a number of consequences for Ethiopia, including lower agricultural yields, reduced water availability, and increased health risks due to extreme weather events (Robinson et al., 2013). Agriculture is a major sector of the Ethiopian economy, and climate change is expected to have significant impacts on agricultural production. In particular, higher temperatures and reduced rainfall are expected to lead to decreased crop yields, particularly of important cash crops such as coffee and tea (Zegeye, 2018). This could lead to a significant decrease in agricultural productivity, potentially leading to food insecurity and poverty. Adaptation to climate change is a key issue for Ethiopia, as the country needs to be able to respond to the projected changes in temperature and rainfall. A number of strategies are being proposed to address this issue, including improved water management systems, increased use of drought-resistant crops, and improved soil fertility management (Abegaz & Wims, 2015). These strategies are likely to be essential to mitigate the impacts of climate change in Ethiopia.

#### 2.1.2. Healthy environment in Ethiopia

Ethiopia is a country that is dedicated to creating a healthy environment for its citizens. With a population of over 110 million people, Ethiopia is making strides to ensure that the environment is clean and safe for its citizens. Ethiopia is home to a variety of different ecosystems, ranging from grasslands to tropical forests. Ethiopia is also home to some of the most diverse wildlife populations in the world, including the African elephant, African lion, and the Ethiopian wolf. The Ethiopian government has been working to protect the environment and promote sustainable development. In 2010, Ethiopia developed the National Environmental Policy, which aimed to address the environmental challenges facing the country. The policy set out a number of initiatives to improve the environmental situation, including the adoption of renewable energy sources, the promotion of agroforestry, and the reduction of air pollution. The policies were established a number of protected areas, which are home to some of the world's most endangered species (Crowther et al., 2019; Kumie & Ali, 2005; Van Den Berge et al., 2021; World Bank, 2019; Ylä-Anttila et al., 2018). The government has also implemented a number of programs to reduce the effects of climate change, such as the National Adaptation Plan of Action. This plan seeks to reduce the impacts of climate change on Ethiopia's environment, economy, and society. It also focuses on increasing the country's resilience to climate change by promoting sustainable agricultural practices, conserving water resources, and improving the energy efficiency of the country's infrastructure. In addition, Ethiopia has taken steps to reduce the amount of air pollution in the country. The government has implemented a number of initiatives to reduce air pollution, such as the National Air Quality Monitoring Program. This program monitors the air quality in the country and provides information to the public about the air quality in their area. The government has also set up a number of initiatives to reduce the amount of particulate matter in the air, such as the Clean Air Initiative (Fujita et al., 2022; World Bank, 2019; World Resources Institute, 2020). This initiative focuses on reducing the amount of dust particles in the air by promoting the use of clean cook stoves and the use of cleaner fuels. Ethiopia is making great strides to create a healthy environment for its citizens. The government has implemented a number of initiatives to reduce air pollution and protect the environment, as well as promote sustainable development. With continued efforts, Ethiopia can create a safe and healthy environment for its citizens (Negatu et al., 2021).

## 2.2. Research hypothesis

The impact of green legacy, an initiative aimed at combating climate change in Ethiopia, can be assessed through various parameters. Here are six parameters that can be considered in evaluating the impact:

### 1. Tree planting and healthy environment

The number of trees planted through the green legacy initiative is a crucial parameter to gauge its impact. Monitoring the quantity and distribution of trees planted across different regions provides insight into the scale of reforestation efforts and their potential for carbon sequestration. The empirical result of Lambert and Orkaido (2023) and Bäckstrand and Lövbrand (2006). Planting and growing trees have positive effect on healthy environment.

H1: Tree planting and growing has positive impact on healthy environment

2. Growing trees for carbon sequestration and healthy environment

Assessing the amount of carbon dioxide absorbed by the newly planted trees is essential to measure the impact on mitigating climate change (Feliciano, 2019). Monitoring carbon sequestration helps estimate the reduction in greenhouse gas emissions and the contribution to overall climate resilience. Several studies focused on quantifying the carbon sequestration potential typically involve measuring the biomass and carbon content of planted trees and estimating the amount of carbon dioxide absorbed from the atmosphere. By extrapolating these findings, researchers provide empirical evidence of the initiative’s contribution to mitigating climate change and improving air quality (Fekadu Hailu et al., 2021).

H2: Growing trees for carbon sequestration has positive impact on healthy environment

3. Biodiversity conservation and healthy environment

The impact of green legacy can be evaluated by assessing how it contributes to the conservation of biodiversity. Some studies have examined the ecological impact of the green legacy initiative by assessing changes in biodiversity and ecosystem health. The research by Fentaw et al. (2022) evidenced the green legacy initiative’s positive effects on biodiversity conservation and ecosystem restoration, which promotes healthy environment.

H3: Biodiversity conservation has positive impact on healthy environment

4. Soil conservation and healthy environment

Examining the impact of green legacy on soil conservation is crucial. The research by Tang et al. (2005), Alyokhin et al. (2020), Gessesse and Melesse (2019), Hadaro et al. (2021), and Jin et al. (2023) evidenced that soil conservation has positive effect on healthy environment.

H4: Soil conservation has positive impact on healthy environment

5. Community engagement and healthy environment

Assessing the involvement of local communities in tree planting activities, their awareness of environmental issues, and their commitment to sustaining the planted trees can provide insights into the initiative’s long-term success. The research result of Rawat et al. (2022) evidenced that community engagement and participation in the green legacy initiative response to the drought in Ethiopia have positive effect on healthy environment.

H5: Community engagement has positive impact on healthy environment

6. Climate awareness and education and healthy environment

Evaluating the impact of green legacy on climate awareness and education is crucial for assessing its broader societal impact. Parameters such as the number of educational programs conducted, the reach of awareness campaigns, and the level of understanding of climate change among the population can be measured to gauge the initiative’s impact on public awareness and knowledge. The research findings of Zikargae et al. (2022) environmental education for society and healthy environment have positive relationship.

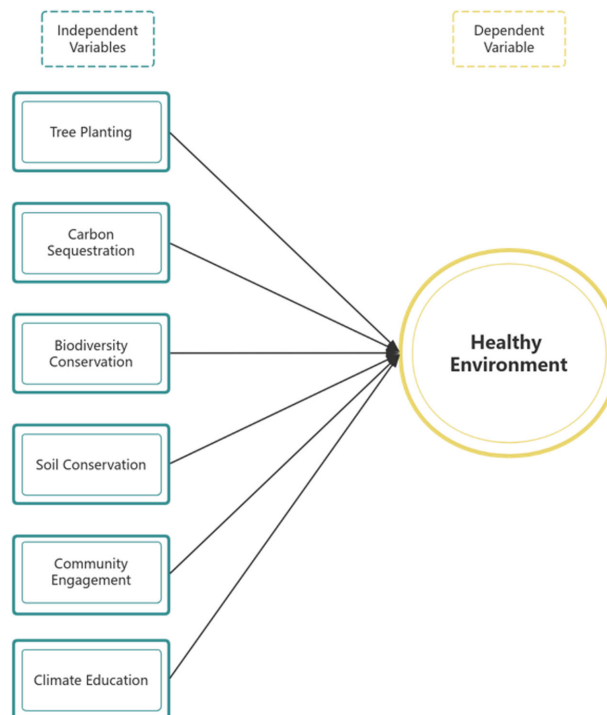
H6: Climate awareness and education have positive impact on healthy environment

2.3. Conceptual framework

Green legacy considering ecological, social, and educational aspects. Monitoring these parameters over time can help track progress, identify areas for improvement, and inform future

strategies for climate change mitigation in Ethiopia. Figure 1 shows the relationship between healthy environment and six green legacy indicators such as carbon tree planting, sequestration, biodiversity conservation, soil conservation, community engagement, and climate education on healthy environment in Ethiopia.

Figure 1  
The relationship between green legacy indicators and healthy environment



3. Methods

3.1. Research design

One example of a research design used in social science research is the case study design. This design involves an in-depth analysis of a single individual, group, or event. Researchers using this design will often use a combination of methods such as interviews, surveys, and observations to gain an understanding of the case. The goal of this design is to gain a deeper understanding of the topic and its context. In this study, the correlational and descriptive research designs were employed.

3.2. Research approach

The research approach refers to the systematic method or strategy employed by researchers to investigate a particular research problem or question. It serves as a roadmap that outlines the overall plan and steps involved in conducting the study. Researchers carefully select an appropriate research approach based on the nature of the research topic, data availability, and the objectives of the study. There are various research approaches commonly used, such as qualitative, quantitative, experimental, or

mixed methods. Each approach has its distinct characteristics and methodologies. Qualitative research focuses on exploring and understanding phenomena in depth, relying on interviews, observations, and textual analysis. On the other hand, quantitative research involves collecting numerical data, analyzing it statistically, and drawing conclusions based on statistical inferences. Experimental research is designed to establish cause-and-effect relationships by manipulating variables and controlling for potential confounding factors. Mixed-methods research combines both qualitative and quantitative approaches to provide a comprehensive understanding of the research problem. The research approach determines the type of data collected, the data analysis techniques employed, and the interpretation of findings. It is important for researchers to carefully select and justify their chosen approach to ensure the validity and reliability of their study. In this research project, mixed method was adopted by researchers.

### 3.3. Sources of data

Sources of data can be broadly categorized into two main types: primary and secondary sources. Primary sources of data involve the collection of original data directly from the source. This can include methods such as interviews, surveys, observations, and experiments. Primary data are generally considered the most reliable and accurate since it is specifically gathered for a particular purpose. On the other hand, secondary sources of data involve the utilization of existing data that have been collected by others for various purposes. Examples of secondary data sources include government reports, academic journals, books, online databases, and historical records. While secondary data are relatively quicker and more cost-effective to access, its reliability and relevance may vary depending on the quality and credibility of the sources. By considering both primary and secondary sources, researchers can access a wide variety of data to support their studies and draw meaningful conclusions. The primary data sources were used in this paper.

### 3.4. Structure of sampling

**Size of the target population:** The target population of a study refers to the broad group of people that researchers are examining. The target population of this study consists of 690 experts from multiple government entities related to agriculture, environment protection, and climate changes in Ethiopia and includes professionals specializing in various fields such as agriculture, forestry, climate change, and environmental science. The experts within this target population likely possess diverse knowledge and skills relevant to their respective areas of expertise. They include scientists, researchers, policymakers, environmental officers, agronomists, foresters, and other professionals involved in promoting sustainable development, protecting the environment, and addressing climate change challenges in Ethiopia. **Government entities involved:** The three institutions mentioned, namely the Ministry of Agriculture, Environment Protection Authority, and the Ministry of Environment, Forest, and Climate Changes, play crucial roles in overseeing agricultural practices, environmental protection, and climate change mitigation and adaptation efforts in Ethiopia. These entities are responsible for formulating policies, implementing regulations, and coordinating activities related to their respective domains.

**Collaboration and coordination:** Given that the target population comprises experts from different entities, it implies that

collaboration and coordination among these institutions are essential for addressing common environmental concerns and ensuring sustainable development practices across sectors in Ethiopia. It is important to consult official sources and relevant government departments for the most accurate and up-to-date information on the target population you are interested in.

$n = \frac{690}{1+690(0.5)^2} = 253$  means there are 253 experts as source of data collection for this project (Yamane, 1967).

### 3.5. Ways of data collection and analysis

There are several methods of data collection commonly used in research. Here are some of the main methods:

**Surveys and questionnaires:** Surveys involve asking a set of questions to a sample of individuals or organizations. Surveys can be conducted through various means such as in-person interviews, phone interviews, mail surveys, or online questionnaires. **Interviews:** Interviews involve direct interaction between the researcher and the participant. They can be structured (with predetermined questions), semi-structured (with some flexibility to follow-up on interesting responses), or unstructured (allowing for open-ended discussions). **Observations:** Observational methods involve systematically watching and recording behaviors, events, or situations in a natural or controlled setting. Observational data collection can be done through participant observation (the researcher participates in the observed activity) or non-participant observation (the researcher remains separate from the activity). **Experiments:** Experiments involve manipulating variables under controlled conditions to observe the resulting effects. Experimental data collection often involves collecting quantitative measurements or observations. **Existing data:** Researchers can analyze existing data collected by others, such as government statistics, company records, or previously conducted studies. This can be useful for conducting secondary analysis and exploring new research questions. **Case studies:** Case studies involve in-depth examination of a particular individual, group, or situation. Data collection in case studies can include interviews, observations, and analysis of documents or records related to the case. **Focus groups:** Focus groups involve bringing together a small group of individuals to discuss a specific topic under the guidance of a moderator. Focus groups can generate valuable qualitative data through group interactions and discussions. In this study, questionnaire and interview were used to collect the research data. Both descriptive and regression analysis have been employed in this research. Hence, the mathematical model was showed as follows:

Healthy environment  $\beta_0 + \beta_1 * \text{tree planting} + \beta_2 * \text{growing trees for carbon sequestration} + \beta_3 * \text{biodiversity conservation} + \beta_4 * \text{soil conservation} + \beta_5 * \text{community engagement} + \beta_6 * \text{climate education} + \text{disturbance error}$

## 4. Outcomes of This Study

### 4.1. Total number of responses

To achieve the objective of this particular research project, 253 questionnaires were distributed by researchers. Then, the 160 questionnaires were correctly responded and returned back, which give the response ratio of 63%, which implies that more than half of the respondents were participated in data collection of this research project. The reliability test showed the 0.988 Cronbach's alpha, which implies that the data collected through questionnaire.

### 4.2. Analysis of descriptive analysis

Mean and standard deviation are essential tools of descriptive statistics analysis. The mean, also known as the average, provides a measure of central tendency by summing up all the values in a dataset and dividing by the total count. It represents the typical value within the dataset. On the other hand, the standard deviation quantifies the amount of variation or dispersion within the data. It measures how spreads out the values are from the mean and provides insights into the overall distribution of the dataset. By using these measures, analysts can summarize and describe the characteristics of a dataset, gaining valuable insights and making informed decisions.

Mean is the average value of responses from questionnaires. In this research project, healthy environment has 2.7000 mean value, tree planting 2.5938, growing trees 3.0938, biodiversity conservation 3.2232, soil conservation 2.8000, community engagement 2.6063, and climate education 2.9125, respectively. Standard deviation is the variation of mean responses from actual response. The standard of the variables was 1.20168, 1.08909, 1.33552, 0.98483, 1.25793, 1.08794, and 0.94761 for healthy environment, tree planting, growing trees, biodiversity conservation, soil conservation, community engagement, and climate education, respectively (see Table 1).

**Table 1**  
Summary of descriptive statistics

Particulars	Observation	Average	Standard deviation
Healthy environment	160	2.7000	1.20168
Tree planting	160	2.5938	1.08909
Growing trees	160	3.0938	1.33552
Biodiversity conservation	160	3.2232	0.98483
Soil conservation	160	2.8000	1.25793
Community engagement	160	2.6063	1.08794
Climate education	160	2.9125	0.94761

### 4.3. Analysis of relationship among variables

Correlation analysis is a statistical technique that measures the strength and direction of the relationship between two or more variables. In research work, correlation analysis is often used to investigate the relationship between different variables and to identify patterns or trends in the data. By calculating correlation

coefficients, researchers can determine whether two variables are positively correlated (meaning they tend to increase or decrease together), negatively correlated (meaning they move in opposite directions), or not correlated at all. Correlation analysis can be a powerful tool for researchers to gain insights into the complex relationships between different variables and to make more informed decisions based on their findings.

The study variables such as tree planting, growing trees for carbon sequestration, biodiversity conservation, soil conservation, community engagement, and climate education have positive statistically significant effect on healthy environment in Ethiopia (see Table 2). This indicates that six parameters of green legacy such as tree planting, growing trees for carbon sequestration, biodiversity conservation, soil conservation, community engagement, and climate education were positively correlated with healthy environment in Ethiopia.

### 4.4. Regression analysis

#### 4.4.1. Model assumptions

Before running the regression analysis, the most common assumptions to be tested before running the final regression result are normality; multicollinearity, autocorrelation, and heteroscedasticity have been approved by the researchers.

The ordinary least squares (OLS) model is a statistical method used to estimate the relationship between two or more variables. In this model, the goal is to minimize the sum of the squared differences between the actual values of the dependent variable and the predicted values of the dependent variable. The OLS model is widely used in econometrics, finance, and other fields to estimate the parameters of linear regression models. By using OLS, researchers can obtain estimates of the coefficients that describe the relationship between variables, as well as other statistics such as the R-squared value, which measures how well the model fits the data. Overall, the OLS model is a powerful tool for analyzing data and making predictions about future outcomes. The OLS model summary provides a comprehensive overview of the linear regression model.

The R-squared of this study was 0.667 in Table 3, which means the six variables incorporated in model explain 66.7% variegation in healthy environment. On the other hand, tree planting, growing trees for carbon sequestration, biodiversity conservation, soil conservation, community engagement, and climate education all together explain about 66.7% maintaining healthy environment in Ethiopia.

The ANOVA table is an important tool for analyzing the results of a study. It provides a visual representation of the data, allowing researchers to quickly identify any significant differences between the means of two or more groups. The table also provides information about the effect size, which is a measure of the magnitude of the difference between the groups. This helps

**Table 2**  
Analysis of correlation matrix

Correlation of variables	1	2	3	4	5	6	7
Healthy environment	1						
Tree planting	0.324**	1					
Carbon sequestration	0.167**	0.251**	1				
Biodiversity	0.273**	0.137	0.078	1			
Soil conservation,	0.355**	0.101	0.434**	0.039	1		
Community engagement	0.313**	0.995**	0.242**	0.117	0.113	1	
Climate education	0.380**	0.278**	0.008	0.049	0.355**	-0.278**	1

**Table 3**  
Model summary of the study

Model	<i>R</i>	<i>R</i> <sup>2</sup>	Adjusted <i>R</i> <sup>2</sup>	Standard error	Change statistics					Durbin–Watson
					<i>R</i> <sup>2</sup> change	<i>F</i> -change	<i>DF</i> 1	<i>DF</i> 2	<i>P</i> -value	
1	0.883 <sup>a</sup>	0.667	0.646	0.89421	0.667	22.356	6	153	0.000	1.960

<sup>a</sup>Predictors: (Constant), climate education, growing trees for carbon sequestration, biodiversity conservation, community engagement, soil conservation, and tree planting.

researchers to determine whether the differences between the groups are statistically significant or not. Furthermore, the ANOVA table is useful in understanding the relationship between the independent and dependent variables in a study, which can lead to more effective research designs and conclusions.

In the context of an OLS model, the ANOVA table provides important information about the regression analysis. Table 4 contains several components, including the sum of squares (SS) for the regression, the SS for the residual (or error), and the total SS. The degrees of freedom (df) for each component are also included. By examining the *F*-statistic and its associated *p*-value in the ANOVA table, researchers can determine whether the regression is statistically significant. In this research paper, *F*-statistics was 22.256, which is more than 0, and *p*-value of 0.00 implies the model as the whole was statistically significant. Specifically, a significant *F*-statistic indicates that the regression model explains a significant portion of the variability in the dependent variable, while a non-significant *F*-statistic suggests that the model may not be a good fit for the data. Overall, the ANOVA table provides valuable insights into the reliability and validity of the OLS model and can be used to guide further analysis and interpretation of the results.

**Table 4**  
ANOVA table of the study

		Sum of	Mean	<i>F</i>	<i>p</i> -value	
		squares	<i>Df</i>			square
1	Regression	107.258	6	17.876	22.356	0.000b
	Residual	122.342	153	0.800		
	Total	229.600	159			

Healthy environment =  $-1.928 + 0.391 \times \text{tree planting} + 0.193 \times \text{growing trees for carbon sequestration} + 0.212 \times \text{biodiversity conservation} + 0.339 \times \text{soil conservation} + 0.291 \times \text{community engagement} + 0.448 \times \text{climate education} + \text{error}$ .

The coefficient of explanatory variables such as tree planting, growing trees for carbon sequestration, biodiversity conservation, soil conservation, community engagement, and climate education indicated that 1% increase in explanatory variables causes the 39.1%, 19.3%, 21.2%, 33.9%, 29.1%, and 44.8% increase in the dependent variable, see Table 5.

### 5. Discussions

The discussion of regression results is a critical component of research work that allows researchers to interpret and communicate their findings. In this discussion, researchers typically provide a summary of the regression results, including the estimated coefficients and associated statistics such as the *p*-values and confidence intervals. They may also describe the relationship between the independent and dependent variables and discuss any patterns or trends observed in the data. They may also compare the results of their analysis to previous studies in the field and discuss any implications for theory, practice, or policy. Overall, the discussion of regression results is a critical step in the research process that enables researchers to draw meaningful conclusions from their data and contribute to the advancement of knowledge in their field.

The discussion part of this research paper was based on regression results indicated in Table 5; the researchers were accepted from hypotheses one up to six. The result showed that tree planting as first variable of the study has positive relation

**Table 5**  
Regression result

Model	Unstandardized regression coefficients		Standardized regression coefficients			95% confidence interval of coefficients		Collinearity statistics of the model		
	Coefficients	Standard error of the model	Coefficients	<i>t</i>	<i>p</i> -value	Lower limit	Upper limit	Tolerance	VIF	
1	(Constant)	-1.928	0.431		-4.479	0.000***	-2.779	-1.078		
	Tree planting	0.391	0.667	0.355	2.587	0.000***	-0.927	10.710	0.010	105.062
	Growing trees	0.193	0.063	0.215	3.047	0.003***	0.068	0.318	0.701	1.426
	Biodiversity	0.212	0.074	0.174	2.852	0.005***	0.065	0.359	0.937	1.068
	Soil conservation	0.339	0.070	0.355	4.857	0.000***	0.201	0.477	0.651	1.537
	Community engagement	0.291	0.663	0.026	2.244	0.005***	-1.280	1.338	0.010	103.358
	Climate education	0.448	0.086	0.353	5.206	0.000***	0.278	0.618	0.756	1.324

with healthy environment in Ethiopian because the regression coefficient of the variable is 0.391 and significant since  $p$ -value of 0.00 is less than 5% level of significance. The result is the same with empirical finding of Pataki et al. (2021), because they found there is the positive relationship between tree planting and healthy environment. The second, the result showed that growing trees planted as second variable of the study has positive relation with healthy environment in Ethiopian because the regression coefficient of the variable is 0.193 and significant since  $p$ -value of 0.003 is less than 5% level of significance. The result is the same with empirical finding of Pizzutto et al. (2021) because they found there is the positive relationship between growing tree planted and healthy environment. Thirdly, the result showed that biodiversity has positive relation with healthy environment in Ethiopian because the regression coefficient of the variable is 0.212 and significant since  $p$ -value of 0.005 is less than 5% level of significance. This finding is the same as with regression finding of Hakim and Miyakawa (2013) which evidenced that biodiversity has positive effect on healthy environment. The soil conservation has positive effect on healthy environment in Ethiopia because regression coefficient of 0.339 is positive. This result was similar with result of Alyokhin et al. (2020), which suggested that soil conservation has positive effect on healthy environment. The community participation (engagement) in environmental issue has positive relation with healthy environment with regression result of 0.291. This finding was consistent with empirical result of Caperon et al. (2022), who found out good community contributes to the healthy environment. Lastly, result of this study on climate education ( $\beta=0.448$ ) is positive and significant. The finding is the same with research result of Cima (2022) who found out good climate education contributes to the healthy environment. Out of six variables incorporated in the model of this research project, climate education has high regression coefficient. This means environmental education has high contribution to the healthy environment.

## 6. Qualitative Analysis

Besides quantitative analysis, the researchers have conducted the interview with green legacy implementing experts in order to have deep investigation and understanding of the research agenda. According to interview responses, the green environment agenda of Ethiopia was suffering from the following problems.

1. Limited resources and funding: The green legacy initiative requires significant financial resources to purchase tree seedlings, mobilize volunteers, and provide necessary infrastructure for planting and maintenance. However, Ethiopia, being a developing country, may face challenges in allocating adequate funds for the initiative.
2. Land degradation and soil erosion: Ethiopia has been grappling with land degradation and soil erosion issues for many years. Planting trees in such areas requires additional efforts to restore the land and make it suitable for tree growth. Soil erosion can also hamper the survival and growth of newly planted trees.
3. Lack of expertise and technical know-how: Planting and maintaining a large number of trees require technical expertise and knowledge. Ethiopia may face challenges in training and equipping a sufficient number of experts and technicians to ensure the success of the initiative.
4. Climate change and unpredictable weather patterns: These climate-related challenges can affect the survival and growth of newly planted trees, making it difficult to achieve the desired objectives of the green legacy initiative.

5. Ensuring long-term sustainability: Planting trees is just the first step; ensuring their long-term survival and growth is equally important. This requires ongoing monitoring, maintenance, and protection from grazing animals, pests, and diseases. Sustainability efforts must also include community involvement and awareness to prevent deforestation and promote tree conservation.
6. Urbanization and land use conflicts: Balancing the expansion of cities with the preservation of natural habitats and the planting of trees can be a significant challenge.
7. Political instability and conflicts: Ethiopia has experienced periods of political instability and conflicts that can disrupt the implementation of the green legacy initiative.
8. Lack of awareness and participation of community on green legacy incentives: These challenges can hinder the allocation of resources, coordination among stakeholders, and overall progress of the initiative.

Addressing these challenges requires a multifaceted approach that involves collaboration between different parties because ensuring the survival and growth of these trees in the long term requires regular maintenance, including watering, protection from grazing animals, and monitoring. Sustaining these efforts over time can be a challenge, especially in remote and resource-constrained areas.

## 7. Conclusion

The regression result of this paper showed that tree planting, growing trees for carbon sequestration, biodiversity conservation, soil conservation, community engagement, and climate education were variables of green legacy incentives that contribute to the healthy environment in Ethiopia. Hence, the authors concluded that green legacy has positive impact on healthy environment. Having a green environment is essential for a healthy environment. A green environment has a positive impact on air quality, water quality, and biodiversity, all of which are integral components of a healthy environment. Green environments can reduce air pollution levels, improve water quality, and protect biodiversity by providing habitats for plants and animals. Additionally, green environments can help reduce the amount of energy used and waste produced, while also providing opportunities for people to engage in outdoor activities and recreation. All of these elements combine to create a sustainable agenda for the world that will benefit both humans and the environment in the long run.

## 8. Recommendations

The world is facing a major environmental crisis, and Ethiopia is no exception. The country is home to some of the most biodiversity ecosystems in the world, but its environment is also under threat from climate change, deforestation, and other human activities. To protect its unique biodiversity and ensure a healthy environment for its people, Ethiopia must take bold steps to create a green legacy. Ethiopia in creating a green legacy is to reduce emissions of greenhouse gases. Ethiopia is heavily reliant on energy from fossil fuels, which are a major source of emissions. To reduce emissions, Ethiopia should invest in renewable energy sources such as solar, wind, and hydropower. This will not only reduce emissions but will also create new jobs and economic opportunities for the country. Additionally, Ethiopia should implement energy efficiency initiatives to reduce energy consumption and improve energy efficiency. Ethiopia should invest in conservation and sustainable

land management. Ethiopia is home to some of the world's most biodiversity ecosystems, but deforestation and other human activities are threatening these ecosystems. To protect the country's unique biodiversity, Ethiopia should invest in reforestation and conservation efforts. This will help to restore the country's forests, protect its wildlife, and reduce the risk of land degradation. Ethiopia should invest in environmental education and awareness. Ethiopia's citizens need to be made aware of the threats to the environment and the benefits of sustainable practices. This can be done through media campaigns, public events, and school programs. Educating citizens about the environment and sustainable practices will help to create a culture of environmental stewardship. Creating a green legacy in Ethiopia is essential for the country's future. By investing in renewable energy, conservation, and environmental education, Ethiopia can reduce emissions, protect its biodiversity, and create a healthier environment for its people. This green legacy will ensure that Ethiopia's unique ecosystems are preserved and that the country's citizens can enjoy a healthy environment for generations to come.

## 9. Future Direction of the Research

In this research project, six variables incorporated in the model only explained 66.7% of variation in healthy environment. This indicated that there is a limitation of current research project that can be improved by other researchers working on the same agenda. Hence, the researchers recommended the future to use both primary and secondary sources for analysis of data on the same agenda.

## Ethical Statement

This study does not contain any studies with human or animal subjects performed by any of the authors.

## Conflicts of Interest

The authors declare that they have no conflicts of interest to this work.

## Data Availability Statement

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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